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ROLLED PRINT STOCK AND PRINTER USED

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Inventor(s):

Yasuhiko Matsuda  
c/o Satoh Corp.  
1-15-5 Shibuya  
Shibuya-ku, Tokyo

Hirota Ohtaki  
c/o Satoh Corp.  
1-15-5 Shibuya  
Shibuya-ku, Tokyo

Applicant(s):

000130581  
Satoh Corp.  
1-15-5 Shibuya  
Shibuya-ku, Tokyo

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**(54) [Title of the Invention]**

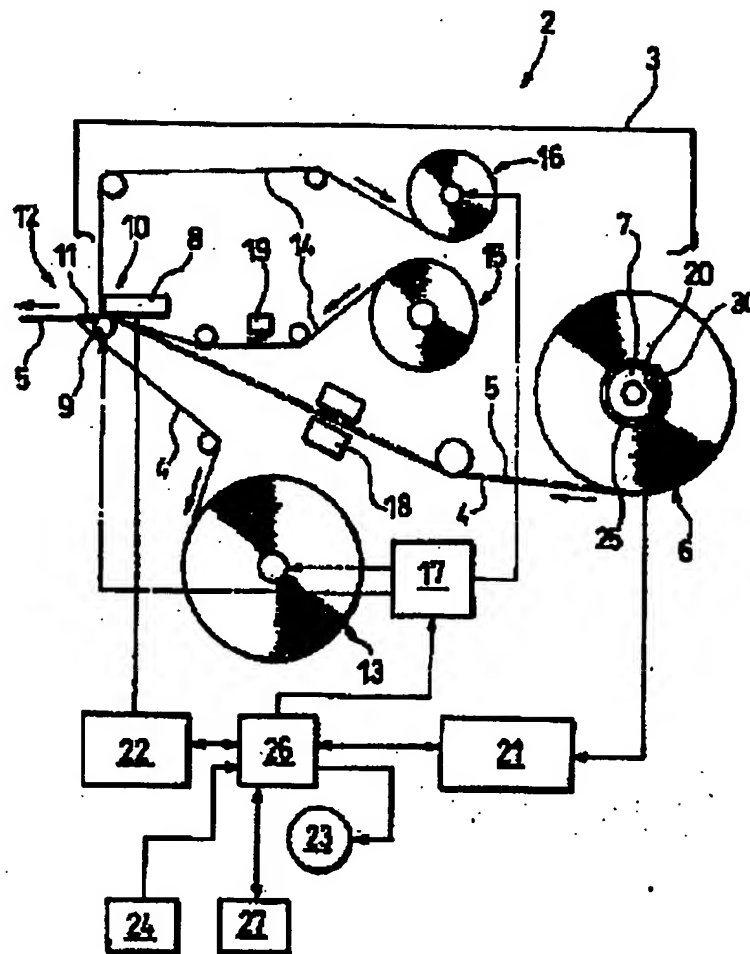
Rolled print stock and printer used

**(57) [Abstract]**

[Purpose] The purpose of the present invention is to produce a rolled print stock that prevents loading of a print stock that does not match the printing content and the printing equipment used.

[Means of solution] A rolled stock print stock wound on a core is loaded in a printer, and a non-contact IC unit with specific information stored in it is applied to the core, and a printer having a loading mechanism for loading the print stock, and a printing mechanism where printing is done for a non-contact IC unit fed from the above-mentioned loading mechanism and the loading

mechanism has a read unit that reads the information stored in the non-contact IC unit.



[Claims of the invention]

[Claim 1] A rolled print stock wound on a core, which rolled print stock is characterized by the fact that a non-contact IC unit that has specific information stored in it is applied to the aforementioned core.

[Claim 2] A rolled print stock wound on a core and loaded on a printer, and a non-contact IC unit with specific information stored in it is formed on the core, and a printer having a loading

mechanism for loading the print stock, and a printing mechanism where printing is carried out on stock fed from the above-mentioned loading mechanism and the loading mechanism has a reading unit that reads the information stored in the non-contact IC unit and feeding is done according to information stored in the non-contact IC unit.

[Detailed description of the invention]

[0001]

[Technical field of the invention] The present invention pertains to a rolled print stock and a printer that uses it, and the invention further pertains to a rolled print stock that prevents printing errors due to loading errors of the print stock, and provides appropriate printing energy and printing form suitable for the print stock and makes an appropriate control assignment and the printer used.

[0002]

[Prior art] In the past, for the print stock used for the above-mentioned printer, a bulk label where many individual labels are temporarily applied to a mounting strip or bulk tag made of cardboard without a pressure-sensitive adhesive layer, etc. can be mentioned. In general, the above-mentioned print stock is wound on a core and loaded on the supply mechanism of the printer, for example, on a rotary feed spindle.

[0003] And in general, printing can be done by a single printer at different pitches or widths, for the different names of stores and users, printing colors, or distribution codes, etc., and unless the correct print stock is loaded, the type of print stock does not match the content being printed, and, as a result, clear printing is not possible or printing cannot be done at the appropriate

position. As a result, print stock [etc.] is wasted. Among those items listed above, in many cases, the pitch is detected by a sensor from the print stock, and in the case of differences in pitch, detection [and adjustment] can be done before printing.

[0004] However, a simple mechanism that makes it possible to distinguish the width of the print stock, and information such as the names of the stores and color to be printed does not exist.

Furthermore, the above-mentioned loading errors sometimes become clear only after starting the printing operation or, in many cases, after the printing is completed, and corrective action is required. Needless to say, when the above-mentioned loading errors are not noticed in time, printing of the wrong format can occur, and other problems may arise.

[0005] Based on the above background, a method where a label printed with a bar code is applied to the core and the bar code is readout by a scanner installed on the loading mechanism of the printer, and data such as the width of the print stock, printing of the store name and printing colors are coded and determined by the decision unit are known. However, the amount of data of the printed bar code is limited and only limited information is determined.

Furthermore, only a small amount of data can be obtained from pre-determined constants, as well.

[0006]

[Problems to be solved by the invention] The present invention is based on the above background, and the purpose of the invention is to produce a rolled print stock where information on the print stock and other information is stored as data, and loading of a print stock that does not match the content of to be printed is prevented, and the printing device used.

[0007] Furthermore, the present invention provides for a rolled print stock where a large amount

of data can be stored as information relating to the print stock such as printing forms, information and constants to be printed, sheet size, printing format, etc. for the print stock is checked via the display unit of the printer loaded with the print stock or display unit of the external control unit that supplies the printing data to the aforementioned printer, and at the same time, the rolled print stock eliminates the need for input by the operator, and [the present invention pertains to] the printer used.

[0008] Furthermore, the present invention provides a rolled print stock where the type of print stock (type of paper) is determined and the appropriate printing energy required for the printer is automatically set, and the printer used.

[0009]

[Problems to be solved by the invention] In other words, the focus of the first invention is attachment of a storage element to the core onto which the print stock is wound, and is a rolled print stock characterized by the fact that a non-contact IC unit storing specific information is attached to the aforementioned core in a rolled print stock wound on a core.

[0010] The second invention is a rolled print stock wound on a core and loaded on a printer, and a non-contact IC unit with specific information stored in it is applied to the core, and a printer having the loading mechanism for loading the print stock, and a printing mechanism where printing is done according to data fed from the non-contact IC unit fed from the above-mentioned loading mechanism and the loading mechanism has a read unit that reads out the information stored in the non-contact IC unit.

[0011] As the position onto which an IC unit having specific information, the inner peripheral or outer peripheral of the core of the print stock or inside the core. For the data input mechanism, a

print input mechanism used for input of specific information such as keyboards and personal computers can be mentioned, and before operation of the print stock loading, data concerning the type of print stock is input.

[0012] In the loading mechanism of the printer of the present invention, the content of each code is read by the readout unit arranged to the above-mentioned core, the type of the print stock loaded, in particular, the width, names of stores, color of printing, etc. is readout, and distinguished and print mismatch caused by loading errors can be avoided.

[0013]

[Means to solve the problem] Fig. 1 is the overall schematic view of a printer equipped with a loading mechanism onto which the print stock is loaded, and printer 2 is equipped with frame 3, rotary feed spindle (loading mechanism) 7 onto which rolled bulk labels where with many individual labels 5 applied on a mounting strip 4 in the form of a roll (print stock) are loaded, printer mechanism 10 having a thermal printing head 8 and platen 9, release mechanism 12 having a release plate 11, mounting strip take-up 13, carbon ribbon supply unit 15 for carbon ribbon 14 used for thermal transfer, carbon ribbon take-up unit 16, drive motor 17, sensor 18 for bulk labels 6, reader unit 20, data control unit 21, head drive circuit 22, alarm generating circuit 23, and print content input mechanism 24 equipped with a print stock data input mechanism.

[0014] In this case, bulk labels 6 are rolled bulk labels where the label stock is wound on cylindrical core 25, and the IC unit described below is attached to the outer surface or inner surface of the core. Furthermore, a variety of data such as label size, type of label (material, etc.), printing energy to be applied to the head, constant printing information and printing colors are coded and stored.



[0015] The data mentioned above can be coded as well. Needless to say, a conventional keyboard can be used for input mechanism 24, or information regarding the type of data for the above-mentioned bulk label can be transmitted along with specific printing data from a personal computer.

[0016] The leading edge of the rolled print stock loaded on the feed spindle is pulled out and fed into printing mechanism 10. Meanwhile, carbon ribbon 14 is pulled from the carbon ribbon supply unit 15 and fed to the printing mechanism via the specified path. In printing mechanism 10, carbon ribbon 14 is laid on the top surface of bulk label 6, and is placed between platen 9 and thermal head 8; the printing signal is supplied to thermal head 8, and the ink on the carbon ribbon is transferred to the label and the specified printing is done. In this case, item 19 is a sensor for detecting the end of the carbon ribbon.

[0017] Mount 4 of label 5 alone is bent back at release plate 11 after printing and label 5 is removed from mount 4. Furthermore, the mount strip from which the labels have been removed is taken-up by mount take-up unit 13 and at the same time, and take-up of the thermal transfer carbon ribbon by take-up spindle 16 occurs at the same time. The transporting of the above-mentioned mount strip to platen roll 9, driving of mount take-up member 13, and operation of carbon ribbon take-up member 16 are all powered by drive motor 17.

[0018] Fig. 2 is a perspective view of the main unit of the bulk label feed spindle, and non-contact IC unit 30 (hereinafter referred to as IC unit) is attached to the outer peripheral edge of core 25. IC unit 30 contains nonvolatile storage (storage means) 40, and the above-mentioned information regarding types of data such as label size, type of label (material, etc.), printing energy to be applied to the head, constant printing information, and printing colors are stored

there. Furthermore, a reader 20 that reads IC label 30 is assembled on the bulk label feed spindle 7. Reader 20 transmits a weak electrical wave so that readout can be done while it is away from the IC unit.

[0019] The reader 20 has an A/D converter and an integrated modem and the weak electric wave is transmitted to IC unit 30 and readout of the data from IC unit 30 is achieved. The data received by reader 20 is stored in data control member 21. CPU (central processing unit) 26 controls memory, data control member, printer control member 22 that controls the printing energy of the thermal head 8, etc., alarm generator 23, print content input member 24 of keyboard equipped with printer, and interface 27.

[0020] Fig. 3 is a circuit chart of the non-contact IC label. A thin IC unit 30 covers main unit 31 containing the IC circuit with a film such as PET resin or paper. The IC circuit is equipped with communication circuit 34, conductive regulator 35, clock circuit (logic formation) 36, demodulator 37, modulator 38, communication logic 39, nonvolatile storage 40 and condenser 41. Furthermore, code 32A in the figure is a coil (antenna). For the nonvolatile storage, an EEROM can be used, for example. The EEROM is an electrically re-writable ROM.

[0021] In the above-mentioned structure, a call is achieved via the weak electrical wave from reader member 20. For the above-mentioned call, for example, the ASK modulation system where a frequency of several tens of MHz is turned on/off by the signal information is used. When the non-contact IC label 30 is exposed to the induction field generated as described above, an electromotive force is generated in coil 32A (antenna). The electromotive force generated in coil 32A (antenna) is adjusted by power source regulator 35 connected to communication circuit 34, and used as the internal power source.

[0022] Furthermore, the signal sensed via coil 32A (antenna) is regenerated by clock regeneration circuit 36, and demodulated by demodulator 37. Based on the demodulated signal, information in nonvolatile storage 40 is readout via the communication logic 39. The information readout is modulated by modulator 38 and output from coil 32A (antenna). The frequency at this time is several hundred KHz, for example. Furthermore, the information output is read out by reader member 20.

[0023] In printer 2 with the structure described above, core 25 of label bulk stock 25 is loaded on the label bulk feed spindle 7 and drive motor 17 is actuated and printing is started, the information stored in IC label 30 at the outer peripheral surface of core 25 is readout and input to data control unit 21. The readout by the above-mentioned reader 20 requires a short transport distance; thus, the readout can be adequately completed at the pitch detection transport distance of the bulk label 6 by the sensor of the bulk label.

[0024] Data control member 21 compares the label information input from the print content input member (input member) 24 and the information readout by the reader member 20 and determines the label size (width and pitch), type of labels (material, etc.), printing energy to be applied to the head and constant printing information, etc. When information matching is completed, the printing operation is started if the information is compatible, and if the information is not compatible, an alarm signal is sent to the alarm generator 23, and a corresponding message is displayed on the display unit (not shown in the figure). Furthermore, the printing operation of printing mechanism 10 is terminated via head driving circuit 22.

[0025] Upon reading the printing energy from IC unit 30, the optimum printing energy of the print stock (label) can be applied. Furthermore, when constant information is readout from the

IC unit, the memory capacity inside the printer can be reduced, and input operation by the operator can be reduced.

[0026] Based on the alarm of alarm generator 23, a mismatch of the width or pitch of the label bulk or type of paper to be loaded is confirmed and the operator proceeds to load a correct type of label bulk.

[0027] In this manner, a simple method is used and the IC unit is attached to core 25 and a greater quantity of data can be stored, and storage of suitable printing data, printing density, printing speed, print stock, printing form, printing color, etc. is made possible, and correct printing can be done and waste of print stock can be prevented.

[0028] In the embodiment of the present case, the IC unit is attached to the outer peripheral of the core, but it can be attached to the inside periphery of the core as well. Furthermore, an example where the IC unit is attached to the core is used, but other methods can be used as well as long as the information of the print stock is incorporated into the printer by the IC unit.

Furthermore, the printing color information of the IC unit stored determines the color of the carbon ribbon.

[0029]

[Effect of the invention] As described in detail above, the IC unit is formed on the core and greater quantity of data can be stored, and storage of a suitable printing data, printing density, printing speed, print stock, printing form, printing color, etc. can be made possible, and correct printing is made possible and waste of print stock can be prevented. Furthermore, input by the operator can be reduced.

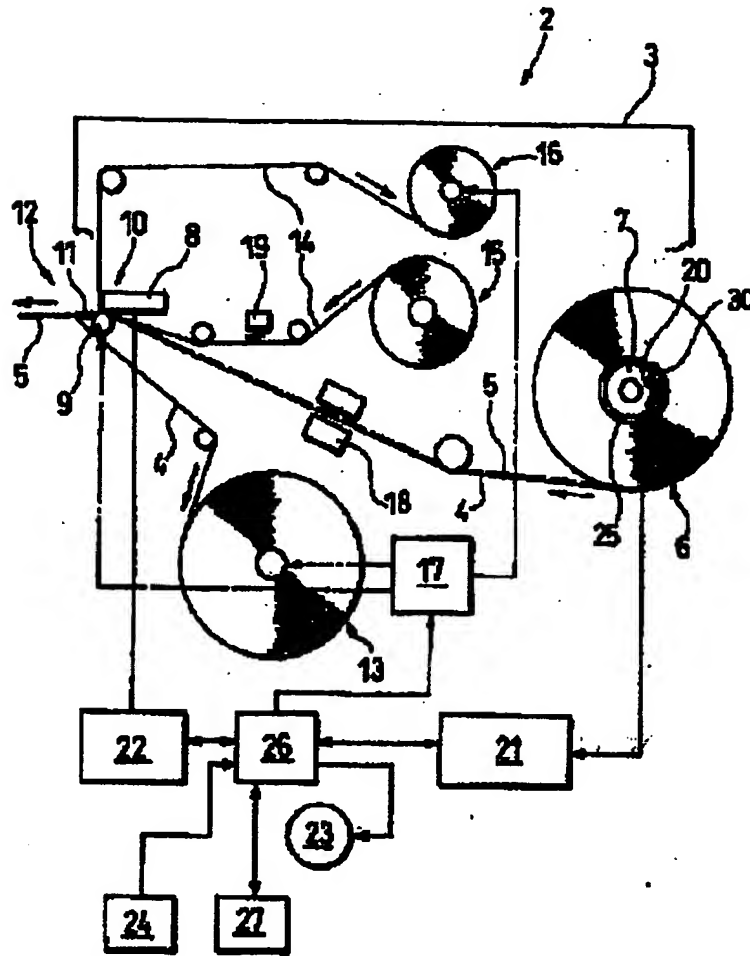
[Brief description of figures]

- [Fig. 1]      The overall schematic view of the printer of the present invention.
- [Fig. 2]      The perspective view of the main unit of the label bulk feed axis.
- [Fig. 3]      The circuit chart of the non-contact IC label.

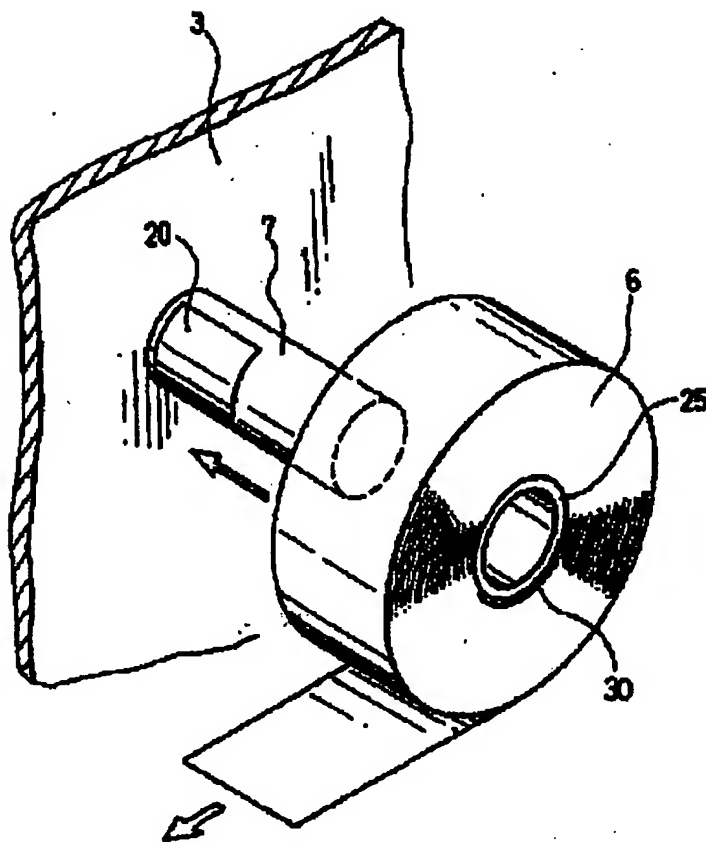
[Explanation of codes]

- 2      Printer
- 6      Bulk labels
- 7      Feed spindle
- 10     Printer mechanism
- 20     Reader member
- 21     Data control unit
- 22     Head driving circuit
- 23     Alarm generator
- 25     Core
- 30     Non-contact IC unit
- 40     Nonvolatile storage

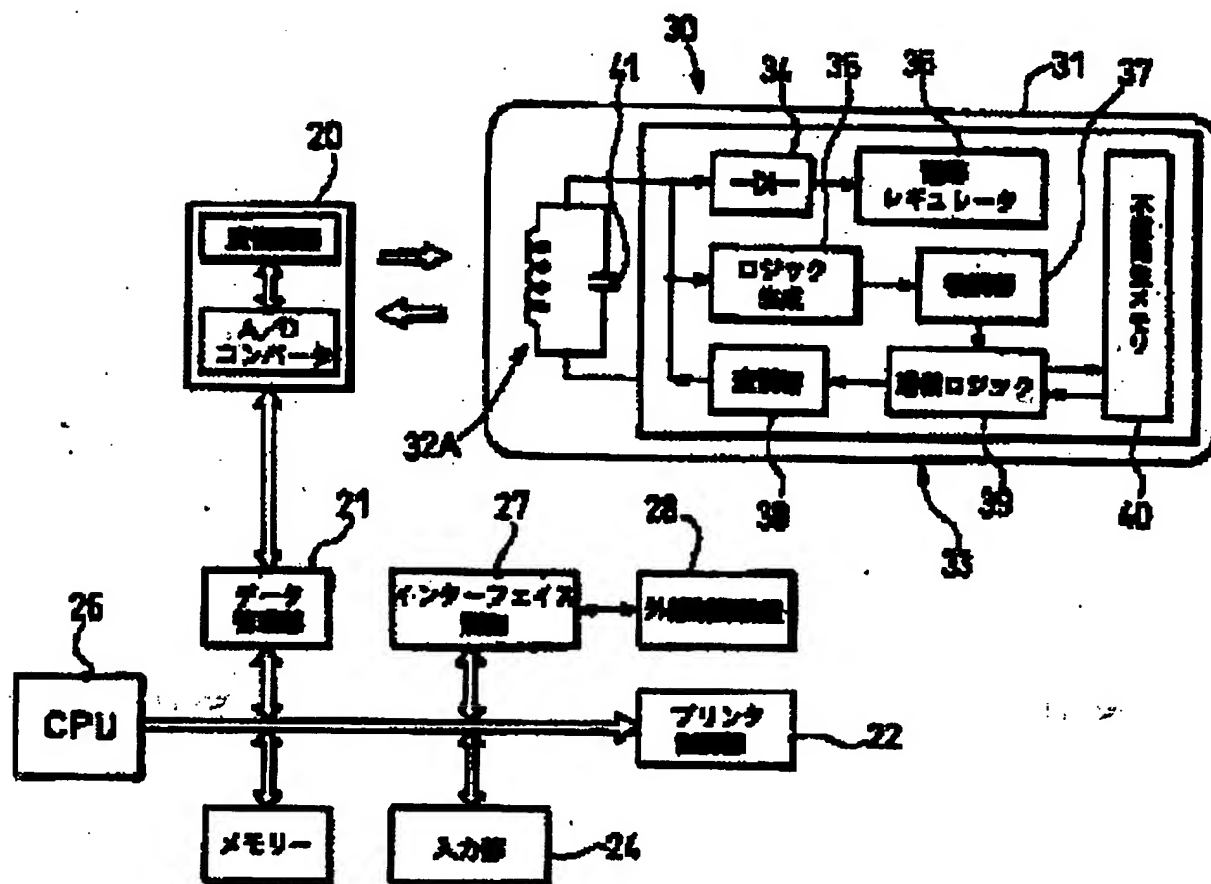
**[Fig. 1]**



[Fig. 2]



[Fig. 3]



reader unit 20, data control unit 21, head drive circuit 22, alarm generating circuit 23, and print content input mechanism 24, interface 27, [item 28 not defined in text, not readable], conductive regulator 35, clock circuit (logic formation) 36, demodulator 37, modulator 38, communication logic 39, nonvolatile storage 40,